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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/596,847

06/27/2006

Jasko Musacendic

4518-43

1292

26496 7590 11/12/2009  
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EXAMINER

STEELE, JENNIFER A

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

11/12/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/596,847	<b>Applicant(s)</b> MUSAEFENDIC, JASKO	
	<b>Examiner</b> JENNIFER STEELE	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 61-73 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 61-73 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the additional layers of first and second plies and dissipating elements of claim 62 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. Claim 61-73 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 61 recites the limitation that "said polymer matrix is absent between section of said outer layers and said at least two inner plies". The specification describes the inner plies as claimed to be outer plies (page 3, lines 9-16 and as shown in the Figures) and the specification describes the outer (or inner plies) to be impregnated fibrous plies. As the fibrous plies are impregnated with a polymer then there would be polymer between the outer plies and the outer faces. It is also not clear from the specification that the polymer matrix is absent between the outer layers and the inner plies. As taught in the specification, there is polymer, at least in the form of the impregnated fibrous plies, in between the inner plies and the outer layers.

The claim that the polymer is absent is a negative limitation that there is no polymer present. Any negative limitation or exclusionary proviso must have basis in the original disclosure. The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. See *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983), *aff'd mem.*, 783 F.2d453 (Fed. Cir. 1984).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 61-73 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 61 describes "inner plies" and the specification and Figures describe these plies to be outer plies on page 3, however describes them to be "inner plies" on page 2. It is not clear if the inner plies are equated with outer plies shown in the figures.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claim 61 rejected under 35 U.S.C. 102(b) as being anticipated by Bjorksten et al (US 2,768,919).** Claim 61 describes a high impact strength, elastic laminate system for enhancing impact resistant properties of a laminate structure, said laminate system comprising:

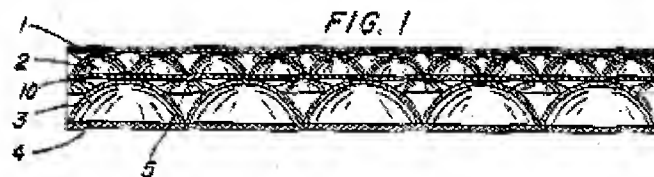
- a first outer layer
- a second outer layer
- at least two inner plies placed between the first and second outer layers;

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- at least one dissipating element between said inner plies adapted to dissipate and redirect randomly directed local loading applied to at least one of said two outer layers, to tensile loading directed in longitudinal direction of said inner plies; and
- a polymer matrix in between said first and second layer and said first and second plies,
  - said polymer matrix absent between section of said outer layer and said at least two inner plies.

Bjorksten teaches an armor material comprised of a first and second outer layers **1** and **4** and inner layers **2**, **3** and **10**. Bjorksten teaches at least two inner plies.

Bjorksten teaches dissipating elements in the form of spherical calottes **2**, **4** and **5**. (col. 1, lines 45-64) and shown in Fig. below.



The calottes are intended to absorb a blow to the surface and dissipate the shock (col. 1, lines 64-70).

Bjorksten teaches an adhesive or grease used in assembling the layers for example a polyvinyl butyral rubber type composition. The rubber composition is equated with the polymer matrix. Bjorksten teaches a polymer in between the plies and shows the polymer is absent between sections, such as within the calottes.

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 5. Claim 61-73 rejected under 35 U.S.C. 103(a) as being unpatentable over Bjorksten et al (US 2,768,919) in view of Cook et al (US 4,179,979) and Hollis, Sr. (US 4,179,979).**

As to claim 62, Bjorksten differs and does not teach multiple layers or reinforcing ply.

Cook teaches a multiply ballistic armor system comprised of layers of hard geometric objects tensionally restrained in their layers by fiber material interwoven about the objects and the objects and fibers are bonded together by adhesive (ABST). See Fig. 1 and 4 below.

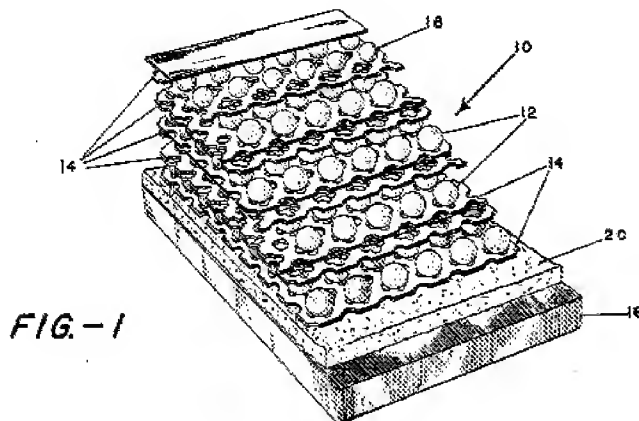


FIG. -1



FIG. -4

Each layer of geometric objects is equated with a ply layer. Cook teaches multiply inner plies.

Hollis teaches a protective wall structure that resists penetration and impact. Hollis teaches outer layers of multilayer cloth with at least one inner protective inner layer defined by a rib-like formation defining a series of pockets. The pockets are filled with a polymer self sealing core structure (ABST). The polymer is equated with Applicant's polymer matrix. The structure of Hollis is shown in embodiments in Fig. 4 and Fig. 8 below.

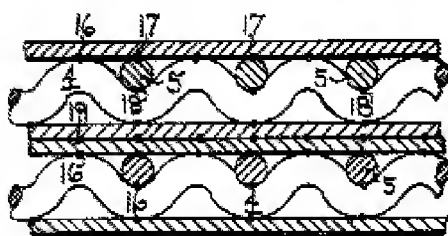


FIG-4

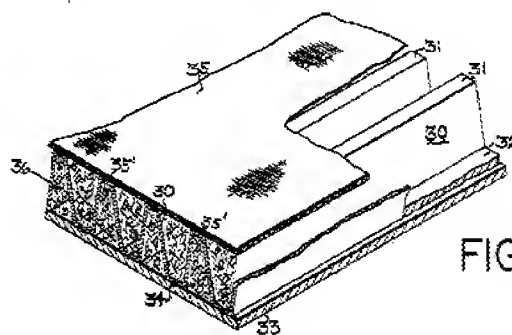


FIG-8

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add additional inner plies motivated to improve the strength and dissipation of an impact on the structural laminate.



As to claim 63, Bjorksten differs and does not refer to the inner layers as reinforcing plies. Cook teaches the inner plies are reinforcing layers as the geometric objects are tensioned together with reinforcing strands (col. 5, lines 35-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ inner reinforcing plies motivated to improve the impact strength of the laminate.

As to claim 64, Bjorksten differs and does not teach reinforcing plies made from the materials claimed. Cook teaches the geometric objects are tensioned together with fiber strands. The fiber strands are interwoven around so as to support each rod **70** in tension against impact (col. 6, lines 1-15). The fiber strands, shown in Fig. 4 as **76** are equated with Applicants claimed single fibre reinforcement and/or woven rovings.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a fiber reinforcement motivated to improve the impact strength of the laminate.

As to claim 65, Bjorksten teaches spherical shaped dissipating elements.

As to claim 66, Bjorksten teaches the dissipating elements can be made from steel, fiberglass or titanium (claims 5-7).

As to claim 67, Bjorksten shows an arrangement of dissipating ply elements that are in a unidirectional, cross-ply and symmetric, balanced as shown in the Figure above.

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As to claim 68, Bjorksten differs and does not teach a polymer matrix formed from one of the claimed compounds. Hollis teaches the polymer matrix which fills the voids can be of a epoxy-urethane elastomer (col. 10, lines 25-28).

As to claim 69, Bjorksten teaches the outer layers are comprised of plastic material or a metal foil (col. 1, lines 46-49).

As to claim 70, Bjorksten differs and does not teach an additional layer on the outer layers of the composite laminate. Hollis teaches outer layers of multilayered cloth that can be aluminized (col. 7, lines 45-51). It would have been obvious to one of ordinary skill in the art to add additional outer layers motivated to improve the strength of the laminate and provide the desired outer surface.

As to claim 71, Bjorksten teaches the laminate is created to dissipate force in a parallel direction (col. 1, lines 65-72). The dissipation of force in the laminate of Bjorksten is equated with Applicant's claim 71 where the loading is redistributed in a longitudinal direction to the main axis of said reinforcement plies.

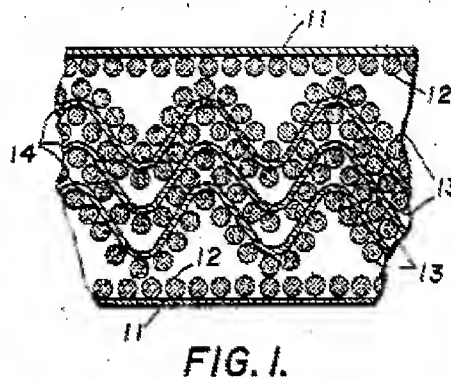
As to claims 72 and 73, Bjorksten, Cook and Hollis differs and do not teach the impact strength or the density of the laminate. However as the references are directed to laminates intended to reduce the impact of a load, it would have been obvious to optimize the claimed properties motivated to achieve the desire strength in the laminate.

**6. Claim 61-73 rejected under 35 U.S.C. 103(a) as being unpatentable over Calfee (US 3,755,059) in view of Hollis, Sr. (US 4,179,979).** Calfee teaches a laminar composite of high impact and shearing resistance comprised of layers of graphite fiber,

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glass fiber and corrugated metal foil in an arrangement which resists spalling, interlaminar shearing and multipoint failure due to shock wave transmission (ABST).

Calfee's laminate is show in Fig. 1 below where **11** is a metal foil layer and equated with Applicant's outer layers, **12** is a layer of glass fibers and equated with Applicant's inner plies, **13** are graphite fiber layers and equated with Applicant's inner plies and **14** are corrugated metal foil layers and equated with Applicant's dissipating elements.



Calfee Fig. 1

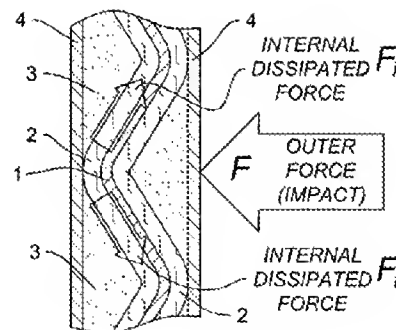


Figure 2.

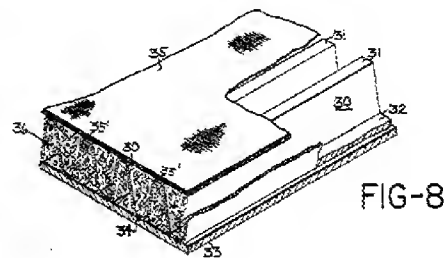
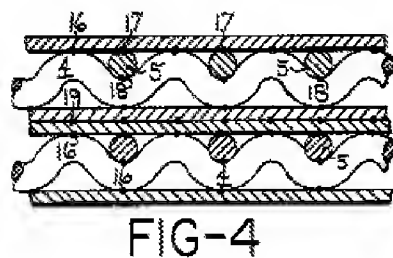
Applicant's Fig. 2

Calfee differs from the current application and does not teach a polymer matrix arranged to occupy all the volume not taken up by the layers.

Hollis teaches a protective wall structure that resists penetration and impact. Hollis teaches outer layers of multilayer cloth with at least one inner protective inner

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layer defined by a rib-like formation defining a series of pockets. The pockets are filled with a polymer self sealing core structure (ABST). The polymer is equated with Applicant's polymer matrix. The structure of Hollis is shown in embodiments in Fig. 4 and Fig. 8 below.



It would have been obvious to employ the polymer resin filled pockets of Hollis in the high impact laminate of Calfee motivated to increase the strength of the composite laminate.

As to claim 62, Calfee teaches additional layer of inner plies and dissipating elements.

As to claim 63, Calfee teaches the function of the inner plies is to serve as reinforcement. Calfee teaches that the glass fiber plies provide greater impact strength and therefore provide an improved laminate if the glass fibers are placed are located on the impact side (col. 2, lines 46-66).

As to claim 64, Calfee teaches the plies are made from S-glass, E-glass fibers (col. 3, lines 23-25).

As to claim 65, Calfee teaches a corrugated metal foil which is equated with Applicant's dissipating element and the corrugated sheet recited in the claim.

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As to claim 66, Calfee teaches the metal foil is preferably made from a metal such as aluminum ,beryllium, magnesium, nickel, steel or titanium (col. 3, lines 20-23).

As to claim 67, Calfee teaches at least two dissipating ply elements and reinforcing fibrous plies. Calfee teaches the fibrous plies can have fiber orientations of 0 or 90 degree (Table 2) which would be a unidirectional or cross-ply orientation as claimed. Calfee teaches the effect on fiber orientation is minimal (col. 5, lines 1-11).

As to claim 68, Calfee teaches the fibrous plies are impregnated with an epoxy resin (col. 3, lines 46). Calfee differs and does not teach a polymer matrix between the inner plies and outer faces. Hollis teaches the polymer matrix which fills the voids can be of a epoxy-urethane elastomer (col. 10, lines 25-28).

As to claim 69, Calfee teaches the outer metal layers can be made from aluminum ,beryllium, magnesium, nickel, steel or titanium (col. 3, lines 20-23).

As to claim 70, Calfee differs and does not teach an additional layer on the outer layers of the composite laminate. Hollis teaches outer layers of multilayered cloth that can be aluminized (col. 7, lines 45-51). It would have been obvious to one of ordinary skill in the art to add additional outer layers motivated to improve the strength of the laminate and provide the desired outer surface.

As to claims 71-73, Calfee teaches an impact resistant structure as claimed and therefore would possess the property of creating an equilibrium of dissipated loads. Calfee teaches the laminate can absorb impacts of lesser weights than claimed and Calfee differs and does not teach the density of the laminate. One of ordinary skill in

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the art could have optimized the layer thickness and number of layers motivated to produce a laminate that can dissipate a greater impact.

### ***Response to Arguments***

7. Applicant's arguments with respect to claim 61-73 have been considered but are moot in view of the new ground(s) of rejection. Applicant did not present any arguments with respect to the prior 35 USC 103 rejection of Office Action 5/26/2009.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER STEELE whose telephone number is (571)272-7115. The examiner can normally be reached on Office Hours Mon-Fri 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S./  
Examiner, Art Unit 1794

/Elizabeth M. Cole/  
Primary Examiner, Art Unit 1794

11/4/2009